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Presentation Title: The ICEDS OGC-compliant server for interactive global mapping and data delivery using SRTM and Landsat data

Abstract: Authors: Morley JG, Muller JPA-L, Gil N, Willis I, Giovando C

The Department of Geomatic Engineering at University College London (UCL) and ESYS plc have been funded by the British National Space Centre (BNSC's) International Co-operation Programme 2 (ICP-2) to develop a web-based GIS service as a CEOS-WGISS prototype: ICEDS, the Integrated CEOS European Data Server.

Particular aims of the completed first year of the project were to:

1. exploit Open Geospatial Consortium (OGC, recently renamed from the OpenGIS Consortium) technologies for map and data serving;
2. serve datasets for Europe and Africa, particularly Shuttle Radar Topography Mission (SRTM) digital elevation model (DEM) and Landsat TM data;
3. provide a website giving access to the served data along with global medium resolution datasets and cascaded services from other Web Map Servers;
4. provide software scripts and a document describing the data processing and software set-up methods developed during the project.

The SRTM data currently served from ICEDS is the unedited dataset downloaded in tiles in gzipped HGT files from the USGS FTP site. In order to be served on the ICEDS web portal and through an OGC Web Map Service (WMS), the SRTM data were colour hill-shaded with oceans and principal inland water bodies masked out. The decision was made not to attempt to fill the gaps in the unedited data but to highlight these regions as a form of qualitative validation. As a result of the hill-shading and masking process, unfilled pixels in the DEM appear as bright red in the final hill-shaded images. Two sub-sampled pyramid layers were created from the hill-shaded image for faster access.

In addition to a WMS, ICEDS also provides a Web Coverage Service (WCS) allowing direct connection not to rendered views of the data but to the original data – in this case, the unedited SRTM elevations as a seamless layer.

ICEDS is publicly accessible both through its Web portal (http://iceds.ge.ucl.ac.uk) and by WMS and WCS connections.

In using and testing the ICEDS site, the highlighting of unassigned pixels in the SRTM DEM has proved of great use in validating the dataset. Interesting regions of poor acquisition (e.g. areas in the Sahara) become immediately visible at the small (continental) scale and can be interactively zoomed to see more detail. They can then be compared against Landsat images to help to interpret the areas. NGA have kindly made available the inland water mask at 30m partially derived from the SRTM products. This can be overlaid over the hill-shaded SRTM DEMs as well as the Landsat TM mosaics of Europe and Africa kindly made available by Dr Nevin Bryant at JPL. This is also very helpful in discovering artefacts as well as geocoding offsets between Landsat and SRTM. An interactive demonstration of the web-site and its utility for data exploration and validation will be given.